Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Vinyl II THROX Boilers
The Dow Chemical Company
Plaquemine, Iberville Parish, Louisiana
Agency Interest Number: 1409
Activity Number: PER20010019
Draft Permit 2285-V2

I. APPLICANT:

Company:
The Dow Chemical Company
P. O. Box 150
Plaquemine, LA 70765

Facility:
Vinyl II THROX Boilers
Plaquemine, Iberville Parish, Louisiana

II. FACILITY AND CURRENT PERMIT STATUS:

Dow Chemical Company operates the Vinyl II Plant in the Louisiana Division complex. Vinyl II Plant and THROX Boilers operate under two separate permits. Initial Title V permit 2285-V0 was issued on May 1, 1997 for THROX Boilers F-410 and F-420. Currently, THROX Boilers F-410 and F-420 operate under Permit No. 2285-V1, dated December 21, 2001.

Dow Chemical Plaquemine facilities include several production plants.

Part 70 permits addressing portions of the facility have already been issued and one on public notice. These permits include:

Permit #	Units or Sources	Date Issued
2007-V1	Glycol I Plant	05/09/2001
2008-V2	Polyethylene A Plant	10/04/2001
2024-V2	Light Hydrocarbons III Plant	10/29/2002
2025-V1	Vector SBC Plant	05/12/2003
2048-V0	Polyethylene C Plant	03/01/2002
2179-V4	Polyethylene B Plant	08/08/2005
2188-V0	Solvents/EDC I Plant	01/30/2004
2200-V1	Chlorinated Polyethylene Plant	12/01/2004
2227-V3	Cellulose Plant	01/13/2004
2267-V1	Power & Utilities Plant	05/08/2002
2285-V1	Vinyl II Plant THROX Boilers	12/21/2001

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2573-V3	Chlorine Cell Service Plants	08/22/2003
2665-V6	Vinyl II Plant	04/02/2004
2794-V0	Glycol I Plant THROX Unit R4	05/24/2002
2037-V0	Chlorinated Methanes Plant (CMP)	03/10/2005
2203-V1	Glycol II Plant	06/20/2005
2255-V0	Light Hydrocarbons II Plant	01/10/2006
2235-V0	Railroad Tank Car Cleaning Facility	01/18/2006
2190-V0	Environmental Operations Plant	05/31/2006

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire were submitted by Dow Chemical Company on November 1, 2001 requesting a Part 70 operating permit renewal.

A permit application and Emission Inventory Questionnaire were submitted by Dow Chemical Company on June 19, 2003 requesting a Part 70 operating permit modification. Additional information dated February 18, 2004 was also received.

A notice requesting public comment on the permit was published in *The Advocate*, Baton Rouge, on xx xx, 2006, and in *The West Side Journal*, Port Allen, Louisiana, and *Plaquemine Post/South*, Plaquemine, Louisiana, on xx xx, 2005, and submitted to the Iberville Parish Library on xx xx, 2006. A copy of the public notice was mailed to concerned citizens listed in the Office of Environmental Services Public Notice Mailing List on xx xx, 2006. All comments will be considered prior to the final permit decision.

Project description

Thermal Heat Recovery Oxidizers (THROX) F-410 and F-420 are designed for a maximum firing rate of 40.2 MM BTU/hr. Each THROX is capable of simultaneously burning waste liquids and gaseous waste vent streams. Additionally, natural gas is used as a supplemental combustion fuel to control combustion operations to ensure that a Destruction and Recovery Efficiency (DRE) of 99.9999% is achieved.

The THROX Boilers incinerate gases, waste oil, and lab waste from the vinyl chloride and oxychlorination processes, as well as ethylene dichloride (EDC) heavies and waste oil from Vinyl II Plant. THROX Boilers, F-410 and F-420 are regulated under RCRA (BIF interim status) for hazardous waste operations and are permitted to use fuel gas and/or offgas as supplementary fuel.

Each THROX system consists of:

- a horizontal furnace with a liquid feed air/steam assisted atomizer to provide a uniform liquid feed to enhance combustion efficiency
- a waste heat boiler that generates 240 psia steam
- a quench tower to cool the combustion gases; a water absorber column and a caustic scrubber column to remove hydrogen chloride (HCl), chloride, and particulate matter (PM)

A majority of the HCl and chloride in the cooled combustion gases is absorbed and a portion of the PM is removed in the water absorber column, C-412 for F-412 ad C-422 for F-420. Residual quantities of the HCl, chlorine, and PM are removed from the absorber column tailgas in the caustic scrubber, C-413 for F-410 and C-423 for F-420. The caustic scrubber tailgas is emitted to the atmosphere through F-410 an F-420. A Chevron Mist Eliminator was installed in the absorber/scrubber section of each THROX to reduce the PM emissions.

Vents and liquid streams diverted to the THROX Boilers for control are as follows:

- Vinyl II Plant Oxy Unit waste vents and waste liquid process streams
- Vinyl II Plant VCM Production Unit waste vents and waste liquid
- Vents from EDC I to the Oxy Unit when the Oxy Units are shutdown
- Backup control device for process vents from Chlorinated Methanes Plant (CMP, a cross tie pipeline is used to divert vents during CMP THROX shutdown)
- Vinyl chloride loading (railcars and ships) vents.
- Lab liquid waste and waste oil collected in S-420 and T-410

In this permit modification, Dow proposed to include the following changes:
- Reconcile F-410 and F-420 to allow the Chlorine Methanes Plant (CMP) the capability to send vent gases to each THROX continuously
- Incorporate emissions from the EDC Import Cleanup Project and the Cellulose Reactor Tran Vent Project into the THROX permit limits
- Reconcile F-410 and F-420 to update the destruction removal efficiency (DRE) of the THROXs.

Permitted Air Emissions

Pollutant	Before	After	Change
PM_{10}	18.74	18.74	-
SO_2	0.48	0.48	-
NO_X	35.10	35.10	-
CO	16.62	16.62	-
VOC	7.92	0.08	- 7.84
Cl_2	3.02	3.02	-
HCl	43.98	44.50	+ 0.52
Metals	4.792	4.792	-
C_2Cl_4 / CH_2Cl_2 *	0.62	< 0.01	- 0.62

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* Exempted from VOC as defined in LAC 33:III.2117, but are Chapter 51 regulated TAPs.

Prevention of Significant Deterioration (PSD) Applicability and Non-attainment New Source Review (NNSR)

This application was reviewed for compliance with the Louisiana Preconstruction and Part 70 operating permit program. It was also reviewed for compliance with Louisiana Air Quality Regulations, NSPS, and NESHAP. Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR) are not required.

MACT requirements

Vinyl II THROX Units is part of Dow Louisiana Complex in Plaquemine, a major source of toxic air pollutants. Dow meets MACT requirement by complying with the Louisiana meets MACT by complying with 40 CFR 61 Subpart FF, 40 CFR 63 Subparts F, G and H.

Air Modeling Analysis

Louisiana Toxic Air Pollutant (LTAP) dispersion modeling is performed for the applicable LTAP compounds with emissions above the Minimum Emission Rate. The screening modeling results predict the maximum ground level concentrations of toxic air pollutants are below the Ambient Air Standards (AAS).

Impact on air quality from the emissions of the proposed unit will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

IV. Permit Shields

Not applicable.

V. Periodic Monitoring

All periodic monitoring is conducted in accordance with state and federal regulations. See Specific Requirements of the draft Part 70 permit modification for monitoring requirements.

VI. Applicability and Exemptions of Selected Subject Items[1]		
ID No:	Requirement	Notes
See Permit		

[1] This table will be finished with other complex applicability determinations or exemptions.

Vinyl II THROX Boilers
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VII. Streamlined Requirements

Unit or Plant Site	Program Being Streamlined	Stream Applicability	Overall Most Stringent Program
Vinyl II Plant	40 CFR 63 Subpart H-HON	5% VOHAP	40 CFR 63 Subpart H-HON
	LAC 33:III.2122	10% VOC	
	LAC 33:III.5109	10% VCM	
	40 CFR 60, Subpart VV	10% VOC	
	40 CFR 61 Subparts V and F	10% VCM	
	40 CFR 61 Subpart FF	Benzene Waste	
	RCRA 40 CFR Part 264 Subparts BB & CC	10% hazardous material	

VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Disulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Vinyl II THROX Boilers
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New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.